Creation Matters

Volume 26 Number 1
Winter 2021

A publication of the
Creation Research Society

Monarch Orientation

Eugene Chaffin, PhD

In 1976, Frederick Albert Urquhart, a Canadian zoologist, discovered where a large portion of the eastern population of monarch butterflies were migrating for the winter—the mountains of central Mexico. While there are also southern Florida and Cuban overwintering populations, we expect most of the monarchs in, for example, my home state of South Carolina in September will then head southwest toward Mexico.

In September 2020 I found four monarch caterpillars on the milkweed growing at my back fence. I put them in an enclosure my son and I built and was pleased to find that each of them formed a chrysalis and then emerged (eclosed) about ten days later. On September 26 I put tag number ZGM 711 on the fourth captive-reared monarch and transferred it to a butterfly bush around 12:30 p.m. EDT (Figure 1).

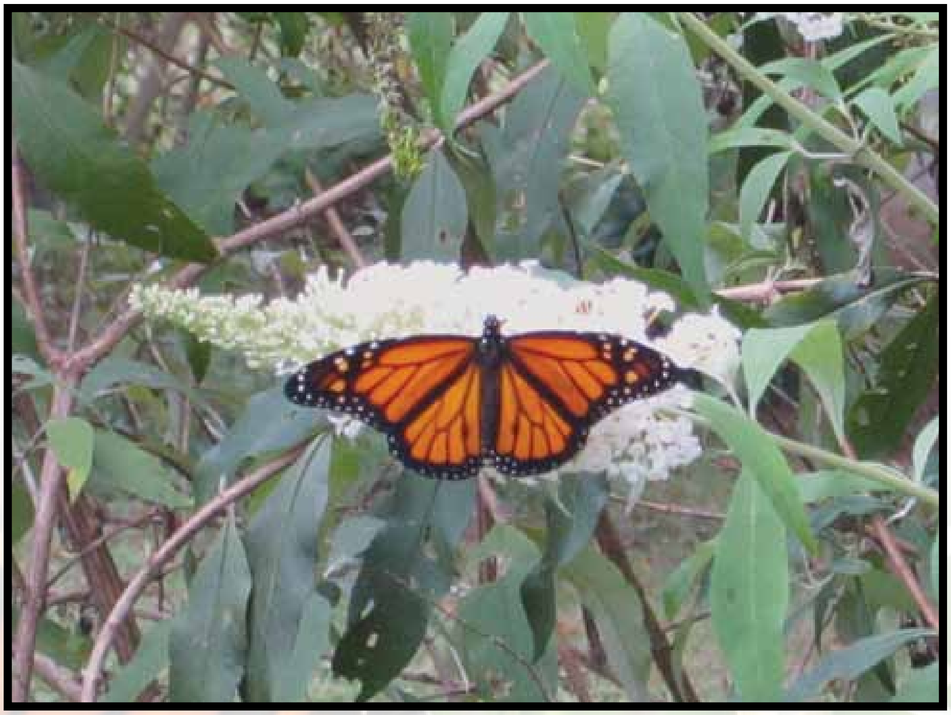


Figure 1. A monarch resting on a butterfly bush.

Despite the overcast sky, the butterfly took flight around 3:26 p.m. Immediately after shaking its wings very vigorously, it launched itself into the air. After flying to a height that cleared the neighbors' house, it circled for some time, rising as it circled, before heading west, or maybe slightly to the north of west, eventually rising to well over 100 feet in altitude. When last seen, it was high in the air alternately flapping and soaring while headed west.

While one observation is hardly enough to draw a general conclusion, it is suggestive. Whatever mechanisms they use, each year monarchs born far to the north still find their way to their overwintering ground in those mountains of central Mexico. This inspired creation researcher Poirer as early as 1999 to comment on their amazing navigational abilities.

Just a few years later a paper was released reporting that monarchs can detect magnetic fields (Mouritsen and Frost, 2002). This was soon followed by studies showing they can also use polarization to locate the sun even on cloudy days (Reppert et al., 2004; Mouritsen et al., 2013).

Polarized light is discussed in optics textbooks (Hecht 2002, chapter 8), and Figure 2 shows plane-polarized light. In this case, the electric field of a light wave oscillates in a plane—the X–Z

continued on page 3

Math Matters

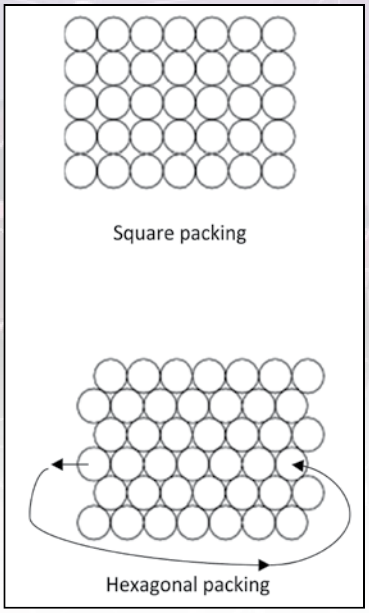
Penguin Math

by Don DeYoung, PhD

Emperor penguins live on the Antarctic ice and swim in the frigid polar sea. These are large penguins with adults four feet tall and weighing 50 pounds. During two months of winter, the females trek to the open ocean for food as shown in the 2005 documentary, *March of the Penguins*. The males stay behind, incubating a single egg on their feet within a brood pouch. Temperatures may plunge far below zero, sometimes reaching -60°C (-76°F) with wind chills still colder.

The size of Emperor penguins helps them retain body heat, since the ratio of exposed area to internal volume decreases for larger animals. The penguins also have a thick layer of fat, along with multiple layers of insulating feathers. The male Emperor penguins huddle together in cooperative temperature regulation, sometimes numbering thousands of birds. Research shows the effectiveness of this behavior: At the center of the huddle, the temperature may reach a toasty 70°F–100°F, too warm for comfort.

The close spacing of the penguins in a huddle follows a mathematical pattern. The figure shows two basic types of two-dimensional packing of objects. Square packing, with aligned rows and columns, results in direct contact with 4 near neighbors and 22% open space. In contrast, hexagonal packing gives contact with six neighbors and only 9% empty space. An emperor penguin huddle displays an impressive near-perfect hexagonal arrangement of the birds (D'Agostino, 2020). They remain close without actually pressing together so their feather layers can properly trap insulating air.



The arrow shows penguin movement from windward side of huddle (left) to sheltered side (right).

Individual penguins display complex movement. They circulate from the cold windward side of the huddle to the leeward huddle boundary where wind and heat loss is less. As this process continues, they gradually move toward the center of the huddle and then back to the windward side as the arrow shows. This slow motion dance ensures that the penguins do not become overly warm or cold. The huddles may also disperse, perhaps because of overheating in the interior. These unique Antarctic creatures clearly are programmed for survival and well-being in the hostile Antarctic environment.

Reference

D'Agostino, Susan, 2020, Math of the Penguins. https://quantamagazine.org/math-of-the-penguins-20200817/.

Contents

Monarch Orientation 1

Math Matters: Penguin Math. 2

Geology Matters: Reasonable Answers to Uniformitarianism Challenges and Reasonable Questions for Uniformitarianism. 4

Prayer Matters 8

Creation Matters

ISSN 1094-6632
Volume 26, Number 1, Winter 2021

Copyright © 2021 Creation Research Society
All rights reserved

Editor: Jean K. Lightner
Assistant Editor: Cheri Fields
Design Services: Cindy Blandon, cblandon@aol.com

Creation Matters is a publication of
Creation Research Society, 1 W. Firestorm Way #145,
Glendale, AZ 85306, www.creationresearch.org

Article submissions and inquiries for *Creation Matters* can be addressed to CMeditor@creationresearch.org

Articles published in *Creation Matters* represent the opinions and beliefs of the authors, and do not necessarily reflect the official position of the CRS.

Monarch Orientation

continued from page 1

plane in the figure—and the magnetic intensity oscillates in a perpendicular plane. There are also more complicated types of polarization, including circular polarization. Suffice it to say, even on cloudy days a pattern of polarization surrounds the sun, which monarch butterflies are able to use to locate it.

Reppert et al. (2004, p. 156) suggest that butterflies use this polarized light and the sun's position to navigate. This also requires the butterflies to compensate for the time of day (Mouritsen and Frost, 2002, p. 10166; Mouritsen et al., 2013), but how they determine directions remains somewhat mysterious. While the monarchs can detect magnetic fields, this does not appear to be the main mechanism they use (Guerra et al., 2012).

Although the science of monarch navigation seems to explain well how monarchs can judge directions, another question remains: how do they know their goal is a mountain range in central Mexico?

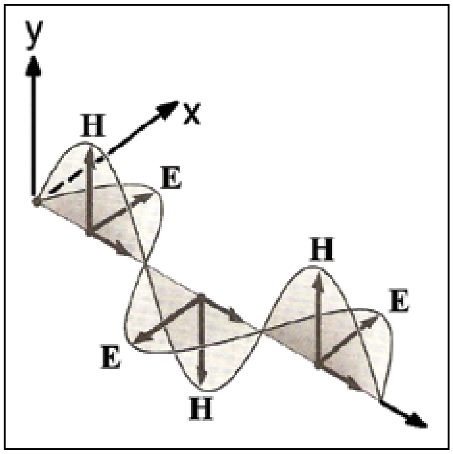


Figure 2. A plane polarized electromagnetic wave, travelling in the z-direction. Drawn by E. Chaffin.

References

Gould, J.L. and C.G. Gould. 2012. *Nature's Compass: The mystery of animal navigation*. Princeton University Press, Princeton, NJ.

Guerra, P.A., C. Merlin, R.J. Gegear and S.M. Reppert. 2012. Discordant timing between antennae disrupts sun compass orientation in migratory monarch butterflies. *Nature Communications* 3: 958. https://doi.org/10.1038/ncomms1965

Guilford, T. and G.K. Taylor. 2014. The sun compass revisited. *Animal Behaviour* 97: 135–143.

Hecht, E. 2002. *Optics, 4th edition.* Addison-Wesley, New York.

Merlin, C., R. J. Gegear, S.M. Reppert. 2009. Antennal circadian clocks coordinate sun compass orientation in migratory Monarch butterflies. *Science* 325*:* 1700–1704.

Mouritsen, H. and B.J. Frost. 2002. Virtual migration in tethered flying monarch butterflies reveals their orientation mechanisms. *Proceedings of the National Academy of Sciences* 99(15): 10162–10166.

Mouritsen, H., R. Derbyshire, J. Stalleicken, O.Ø. Mouritsen, B.J. Frost, and D.R. Norris. 2013. An experimental displacement and over 50 years of tag-recoveries show that monarch butterflies are not true navigators. *Proceedings of the National Academy of Sciences* 110(18): 7348–7353.

Poirer, J. 1999. Monarch butterflies and navigation. *Creation Ex Nihilo Technical Journal* 13(1): 105–114.

Reppert, S. M., H. Zhu, and R.H. White. Polarized light helps monarch butterflies navigate. 2004. *Current Biology* 14: 155–158 (2004).

Urquhart, F.A. 1976. Found at last—The Monarch's winter home. *National Geographic* 150(2): 161–173.

The 2021 Creation Research Society (CRS) Board of Directors election will be held beginning 1 April 2021, and ballots must be returned by 1 May 2021. Voting members will receive candidate biographies and a ballot via postal mail.

Nominees:

Jerry Bergman
Eugene Chaffin
Mark Horstemeyer
Jean Lightner
John Reed
Jeff Tomkins

Geology Matters

Reasonable Answers to Uniformitarianism Challenges and Reasonable Questions for Uniformitarianism

by Michael J. Oard, MS and John K. Reed, PhD

Creation scientists spend a lot of time on defense, answering challenges from secular scientists (Oard and Reed, 2009). Geology has been a particular point of contention, from the secular assaults of the early 19th century to many current controversies that began after the publication of *The Genesis Flood* by Whitcomb and Morris (1961).

Our answers to these challenges are for everyone because they represent a pursuit of truth. One key is to separate data from assumptions (Oard and Reed, 2019), a more difficult task than most imagine, since many secularists do not recognize or admit their assumptions, thinking their conclusions are purely empirical. Many compromising Christians share that blind spot.

The most significant assumptions of secularists include: (1) deep time, (2) uniformitarianism, and (3) evolution. All of these assumptions are contrary to the Christian position of reality and truth as given in God's Word. They also attempt to do it without any influence from a higher power. Questionable conclusions flow from these assumptions. Worse, over time, the layers of faulty assumptions accumulate and are clouded by semantics. For example, "uniformitarianism" has had a multiplicity of definitions since the term was introduced in 1832 (Reed, 2010, 2011a, 2018). Examining the assumptions of natural history is rightly the role of philosophy, but philosophy has largely been abandoned.

Secularists have control of countless institutions, have massive resources, and have overwhelming numbers, believing consensus wins the day. Christianity has truth. We follow Paul's advice from 1 Thessalonians 5:21: "Examine everything carefully; hold fast to that which is good" (NASB). One cannot overemphasize "carefully." Secularist arguments seem impressive upon first examination. They should. They originate from intelligent, professional academics. It takes work and critical thinking to understand their ideas.

Ironically, most challenges to creationism point back to areas in which evolution and uniformitarianism have their own explanatory problems. Many times, their theories rest at the end of a long string of unproven assumptions or claimed "common knowledge." For example, methods of dating strata seem to be a continuous merry-go-round (Reed, 2013).

Ever since the late 18th century, geology grew out of an increasingly overt rejection of Scripture (Reed 2011b; 2012; Reed and Oard, 2012). The surface arguments change, but the foundations remain invariable (exactly as predicted by the Bible in 2 Peter 3:3–6). Uniformitarianism boils down to a fancy version of "the Flood never happened." Uniformity is epistemologically inevitable to the materialist; otherwise nothing in the world would make sense. One of the few advantages of postmodern nihilism is its admitting the impossibility of 'scientific truth' that prior generations held so proudly.

Two examples follow, showing how creationists can provide reasonable answers to the challenges raised by secularists and ask reasonable questions in reply. The primary issue is not recognizing "the science" but identifying the subjective worldview that is filtered behind it.

The Challenge of Dinosaur Tracks, Eggs, and Scavenged Bonebeds

One of the most severe challenges to Flood geology is the recent discovery of millions of dinosaur tracks, eggs, and scavenged dinosaur bonebeds. If the Bible is true, they would have been deposited/created in the early stages of the Flood. Critics wrongly view the early Flood (the first 150 days; Walker's (1994) Inundatory Stage) as chaos everywhere (Oard, 2011). During this time, it is likely that there were many places with fast currents and turbulence, but there also many areas of relative calm or no inundation, initially. The first 40 days, the so-called *Eruptive Phase* (Walker, 1994), were possibly the most violent because of the unleashing of the fountains of the great deep and the opening of the windows of heaven that caused the rain. Between Days 40 and 150, the water may have risen a bit more gradually, with the rain diminishing and the currents and turbulence decreasing. At this time, the Great Deposition occurred, with massive sedimentation and

continued on page 5

Uniformitarianism

continued from page 4

little deformation, and with oscillatory sediments (Oard and Reed, 2017).

Dinosaur fossils and trace fossils were probably preserved during the Great Deposition. During this massive sedimentation event, the water may have shallowed where thick sequences of sediment were deposited (Figure 1). The water level would have been oscillating due to at least five mechanisms (Oard, 2011). This would explain the new dinosaur discoveries. If newly deposited sediment was exposed during a local or regional water level drop, surviving dinosaurs could have traversed the exposed land, making tracks, laying eggs, and scavenging dead dinosaurs. As water levels rose, new sediment would preserve these activities (Figure 2). This is the BEDS (Briefly Exposed Diluvial Sediments) hypothesis of Oard (2011).

This hypothesis may also explain features such as bird tracks, mud cracks, burrows, rain drop imprints, and other unusual trace fossils. We suggest that this could have occurred anywhere between Days 40 and 110 of the Flood, depending on location. Since raindrop imprints are sporadic, tracks, eggs, and scavenged bonebeds would be emplaced after Day 40, otherwise the heavy rain may have eroded away the tracks. Any tracks that would have survived would likely show evidence of numerous raindrop imprints. Since a minimum of hundreds of meters of sediment was eroded in many areas during the Recessive Stage (Walker, 1994), most dinosaurs likely were entombed before the peak of the Flood, in other words, before Day 150 in order to accommodate additional sedimentation.

Like most theories about natural history, this cannot be proven, but it is a reasonable answer, consistent with the biblical account of the Flood.

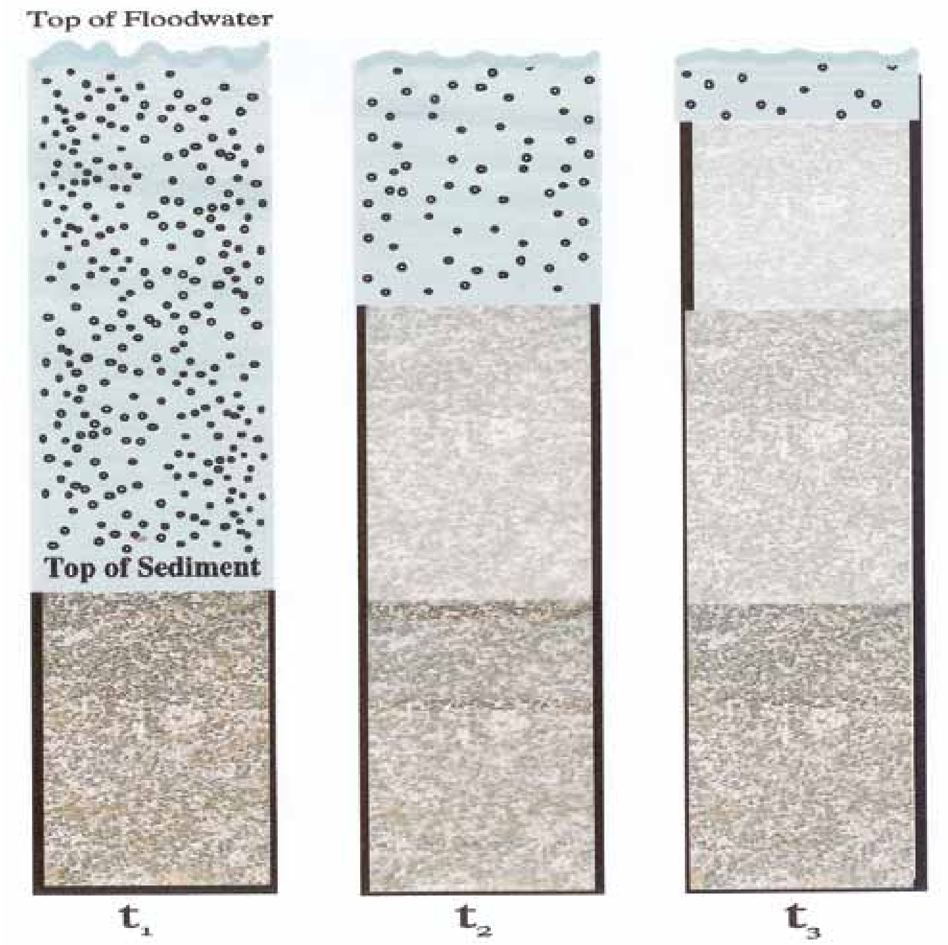


Figure 1. Block diagram showing rapid sedimentation at three different times early in the Flood. As sedimentation progresses, the depth of the Floodwater shallows (drawn by Mrs. Melanie Richard).

Deep Time is Primarily Dead Time

Uniformitarian documentation of deep time is problematic because most of their record (i.e., evidence) is missing. The time is inferred; some have said the geohistory exists largely in geologists' imaginations (Kravitz, 2013). This is true *everywhere* in the geologic record (Reed and Oard, 2017). The example in Figure 3, from the Midcontinent Rift in the Upper Midwest, is the norm, not an exception.

Midcontinent rifting and volcanism is claimed to have occurred between 1109 Ma and 1096 Ma (Stein et al., 2015). However, research into large igneous provinces shows rapid eruption rates for basalt flows depend primarily on the size of the magma vent. At the Columbia River Basalts, vents up to 4 m wide emplaced massive flows in rates measured in hours or days. Those rates could have emplaced the Midcontinent Rift basalts in a matter of days. A vent opening of 10 m, along a 25 km long vent, could have emplaced the flows in under 40 days. For comparison, the Midcontinent Rift stretches 2,000 km, and Cannon (1992)

continued on page 6

Uniformitarianism

continued from page 5

estimated that vents extended nearly 200 km away from the rift center.

There are probably less than 750 flows in the Lake Superior Basin, and fewer than 200 at the southern terminus (Reed, 2000). If individual flows erupted in hours to days and were equally spaced, each flow (taking days) would be followed by between 17,333 to 65,000 years of quiescence over the course of the eruptive event. That deep time is dead time. There is little or no evidence of erosion between these lava beds to justify that much missing time between flows. Greater uncertainty follows because there is no way to discern the spacing of the flows over that duration. Perhaps all occurred in the initial days, perhaps the final few days. Regardless, very little of the time is supported by physical evidence.

How do uniformitarian scientists address it? One method is called “scale masking” (Reed, 2000). When the scale covers millions of years, it is impossible to draw a visible line whose thickness is not hundreds of thousands of years (Figure 3). Given reality observed in the field, any stratigraphic depiction of the flows is wildly unrepresentative; most of the time shown on a stratigraphic chart is not demonstrated. Geologists speak blithely of missing time; what they fail to appreciate is that virtually all of their history is likewise absent.

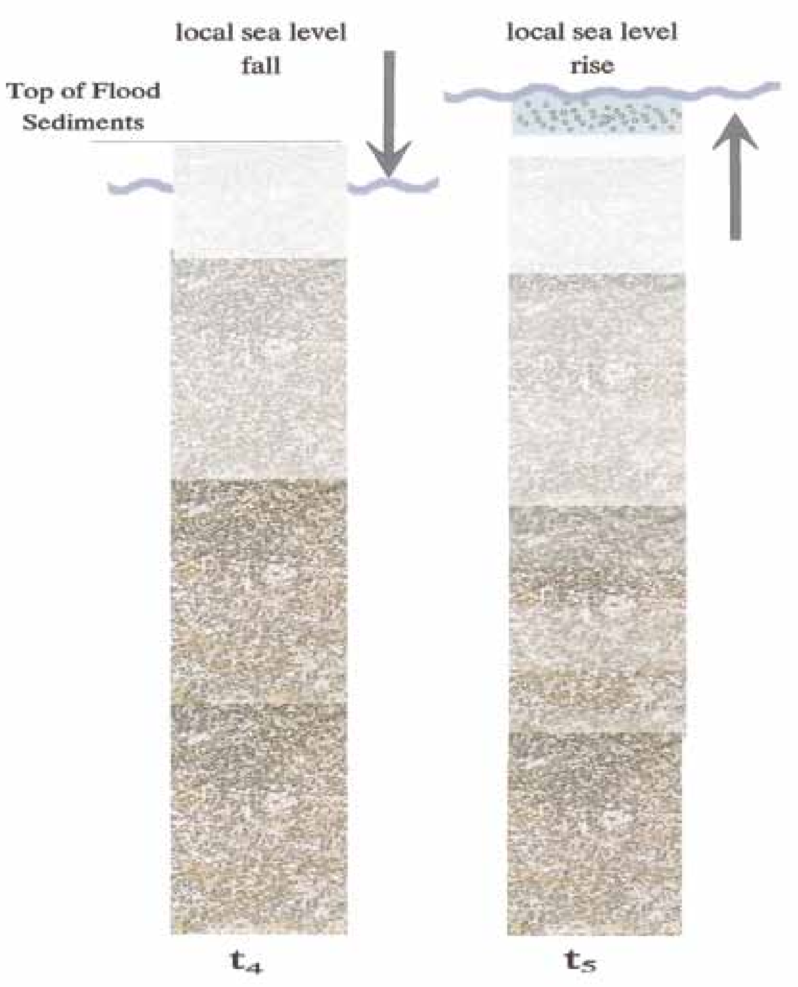


Figure 2. Block diagram of two later snapshots showing how easily freshly laid Flood sediments can be exposed by a small fall in local or regional “sea level” and then covered up by a small rise (drawn by Mrs. Melanie Richard).

Conclusion

Secular scientists challenge creation scientists, often not realizing that their three main assumptions of deep time, uniformitarianism, and evolution are on shaky ground, such as an automatic rejection of Noah’s Flood since the late 1700s. Using biblical assumptions, we can provide reasonable answers to many of their challenges. We also sometimes discover secular scientists are also challenged. We used the examples of dinosaur tracks, eggs, and scavenged bonebeds and the claimed deep time in the Midcontinental rift lava flows and sediments. We do have reasonable answers and more answers will be found with future research.

References

Cannon, W.F. 1992. The Midcontinent Rift in the Lake Superior region with emphasis on its geodynamic evolution. *Tectonophysics* 213:41–48.

Kravitz, G. 2013. The thermodynamics time arrow and the logical function of the uniformity principle in geohistorical explanation. In Baker, V.R. (editor). *Rethinking the Fabric of Geology*, pp. 19–40. Geological Society of America Special Paper 502, Boulder, CO.

Oard, M.J. 2011. *Dinosaur Challenges and Mysteries: How the Genesis Flood Makes Sense of Dinosaur Evidence—Including Tracks, Nests, Eggs, and Scavenged Bonebeds.* Creation Book Publishers, Powder Springs, GA.

Oard, M.J. and J.K. Reed. (editors). 2009. *Rock Solid Answers: The Biblical Truth Behind 14 Geological Questions*, Master Books and

continued on page 7

Uniformitarianism

continued from page 6

Creation Research Society Books, Green Forest, AR and Chino Valley, AZ.

Oard, M.J. and J.K. Reed. 2017. *How Noah's Flood Shaped Our Earth*. Creation Book Publishers, Powder Springs, GA.

Oard, M.J. and J.K. Reed. 2019. What uniformitarian interpretations should creation scientists accept? *Creation Matters* 24(4):4–7.

Reed, J.K. 2000. *The North American Midcontinent Rift System: An Interpretation Within the Biblical Worldview*. CRS Books. Chino Valley, AZ.

Reed, J.K. 2010. Untangling Uniformitarianism, Level I: A Quest for Clarity. *Answers Research Journal* 3:37–59.

Reed, J.K. 2011a. Untangling Uniformitarianism, Level II: Actualism in Crisis. *Answers Research Journal* 4:203–215.

Reed, J.K. 2011b. Three early arguments for deep time, part I: time needed to erode valleys. *Journal of Creation* 25(2):83–91.

Reed, J.K. 2012. Three early arguments for deep time, part II: volcanism. *Journal of Creation* 26(1):61–70.

Reed, J.K. 2013. *Rocks Aren't Clocks*. Creation Book Publishers, Powder Springs, GA.

Reed, J.K. 2018. Changing paradigms in stratigraphy—another new uniformitarianism? *Journal of Creation* 32(3):64–73.

Reed, J.K. and M.J. Oard. 2012. Three early arguments for deep time, part III: the sedimentary record. *Journal of Creation* 26(2):100–109.

Reed, J.K. and M.J. Oard. 2017. Not enough rocks: the sedimentary record and earth's past. *Journal of Creation* 31(2):84–93.

Stein, C.A., J. Kley, S. Stein, D. Hindle, G.R. Keller. 2015. North America's Midcontinent Rift: When rift met LIP. *Geosphere* 11(5):1607–1616. (https://doi.org/10.1130/GES01183.1, Accessed 11/20).

Walker, T. 1994. A Biblical geological model. In Walsh, R.E. (editor), *Proceedings of the Third International Conference on Creationism*, technical symposium sessions. Creation Science Fellowship, Pittsburgh, PA, pp. 581–592; biblicalgeology.net.

Whitcomb, Jr., J.C. and Morris, H.M. 1961. *The Genesis Flood: The Biblical Record and Its Scientific Implications*. Baker Book House, Grand Rapids, MI.

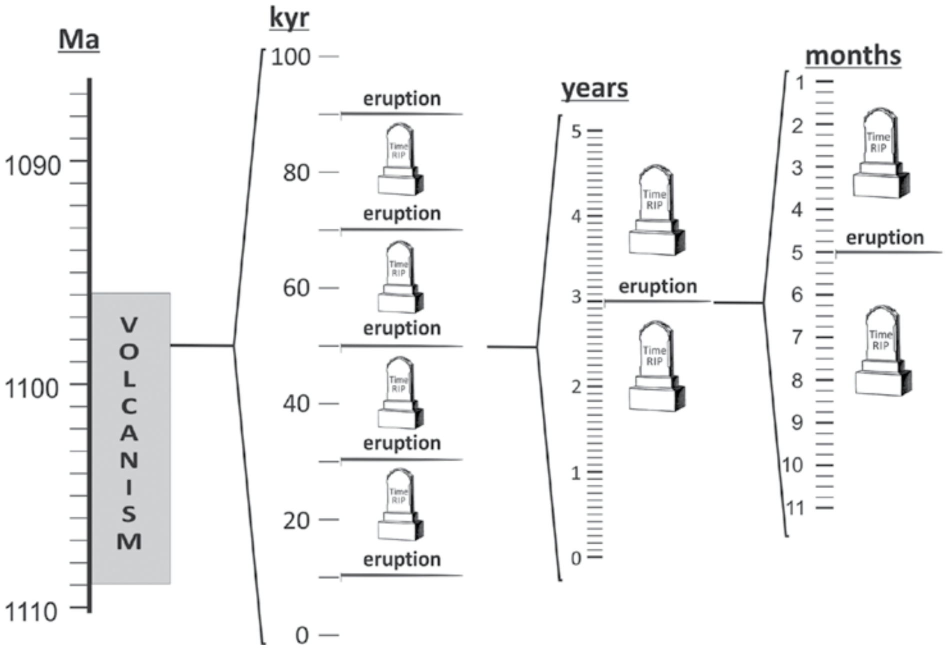


Figure 3. Stratigraphic charts show the Midcontinent Rift volcanics occupying 13 million years. But if each flow erupted in hours to days, then the time is not accurately represented. Magnifying it, even multiple times (moving right), shows how much of the time between flows is really missing. Even thin pencil lines on the original scale (left) would not show the amount of dead time between flows.

The hymn "All Things Bright and Beautiful" was published in 1848 in Cecil Alexander's *Hymns for Little Children.* The refrain is familiar to many:

All things bright and beautiful,
All creatures great and small,
All things wise and wonderful,
The Lord God made them all.

Creation Research Society member Art Manning wrote some additional verses to the old hymn, "All Things Bright and Beautiful." We thought our readers might enjoy them:

The monarchs and the termites, navigators, engineers—
The One who guides their actions can likewise calm our fears.

With echolocation bats and whales can find their way—
Designed by God to whom the night is as the day.

Darting dragonflies and blurring hummingbirds—
Their agile acrobatics, too wonderful for words.

Bioluminescence in animals and plants—
Minerals fluorescent; wise conies, spiders, ants.

Nudibranchs and peacocks with all their brilliant hues—
Their Maker has for mankind the marvelous good news.

Creation Matters
Creation Research Society
1 W. Firestorm Way #145
Glendale, AZ 85306
USA

Address Service Requested

Prayer Matters

Praise: We thank God for a successful move! We appreciate all your prayers and support during the process. Thank you for your faithfulness!

Prayer: Please continue to pray, especially for Kevin and Diane Anderson, as they wrap up the many details involved in relocating their household plus the CRS headquarters. Pray for God's strength and guidance for them, and all the CRS board members who will be meeting at the end of May.

Thanks Again!

CRS has moved!

The Creation Research Society has moved our operation center and research laboratories to the campus of Arizona Christian University, Glendale, AZ. The new facility provides the Society with:

- High-profile location and increased visibility for the Society
- Modern research laboratory
- Easily accessible walk-in bookstore
- Modern office space
- Increased laboratory space

For more information or to help support the Society:
(928) 636-1153
www.creationresearch.org